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ON MICROSCOPIC BOTANY.

To the microscope we are indebted for almost all the recent acquisitions of knowledge both in botany and entomology; without its aid the structure of the more minute vessels of plants would be hidden from us, and our attempts to develope the laws which govern their growth and reproduction would be fruitless. The improvement of this instrument has therefore employed the attention of the ablest men of science, of artists, and of naturalists of the present day, and their exertions have been crowned with considerable success, as may be observed by the public exhibitions of the microscope which are making in many cities of the union. Such as these are however within the reach of few and are not adapted for privately observing the objects which may cursorily fall into our possession.

The chief object of the present communication is to present a few instructions and directions by pursuing which any one may, at a very trifling expense, construct an instrument which will give him access to the astonishing and magnificent structures of plants and insects over which without this aid, minuteness throws an impenetrable veil.

I would first however notice that it has been by microscopic observation that the celebrated botanist Mr R. Brown discovered the true method of fecundation of the families of Orchideæ and Asclepiadeæ; by these the crystals have been discovered in the stems of grasses, Equisetums, and in the cellular tissue of the flower of Ophrys — it has been by these that plants and insects have been found to possess many distinguished marks by which they have been

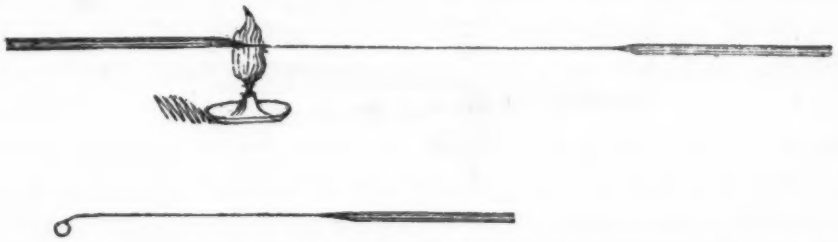
divided into genera and classes, so as to form a dictionary to which the naturalist may readily refer for information; in fact without the microscope, proper scientific divisions and subdivisions must have become almost impossible. Thus the character of the two grand distinctions of the vegetable kingdom, the vascular and the cellular, have been confirmed — the former tribe bearing flowers, being discovered universally to possess spiral vessels, the latter as universally to be without them. Another singular consequence of the use of the microscope is — that a German botanist of the name of Meyen wrote a very few years since a work on microscopic discovery (*Microscopische Entdeckungen*) in which he describes the vegetable conferva, *zygnema nitidum*, a water plant, as having a spontaneous motion, the globules contained in its filaments having a life partly vegetable, partly animal, and reproducing similar globules, some of which became animals endowed with motion; thus endeavoring to connect vegetable existence with that, which was then considered the lowest in the chain of animals, of those produced during vegetable infusion, called animalculæ infusoriæ. Another German naturalist, Ehrenberg, had however in the mean time been devoting five or six years in microscopic observation on these very infusorial animals and by the ingenious method of placing them in water colored by indigo and other substances, had discovered an internal circulation of fluids and a structure so curious and complicated, that elevated these very minute creations, to a class far higher, in animal existence, and annihilated this fond theory of the chain of connexion between vegetable and animal.

The pleasure of observing these minute operations of nature, of seeing how beautifully every part of a plant or creature is adapted to its mode of existence is very great, particularly if, as in the method I am about to describe, the instrument can be used at a few minutes' warning and is perfectly portable.

In the British Museum in London there is or was a case containing a number of small globules of glass with which the celebrated Leuwenhoek made his microscopic discoveries, and in the same collection there is a rare work with engravings of microscopic objects of natural history by La Torre, all which were made with the assistance of globules of glass of his own manufacture; of this last work a gentleman who has passed many years in such observations with the finest compound instruments, made by Tulley and Gould, remarks, "indeed without seeing them we could hardly have believed that

glass spherules were capable of affording such accurate views of the objects as must have been the case for him to delineate and furnish such excellent engravings."

These spherules of glass are easily made from thin strips of glass such as the glaziers cut when fitting windows, say about one sixteenth of an inch square; thus, take one strip in each hand and hold the ends touching each other in a spirit lamp until red hot and melting, then draw out one end till it makes a long, fine thread thus:

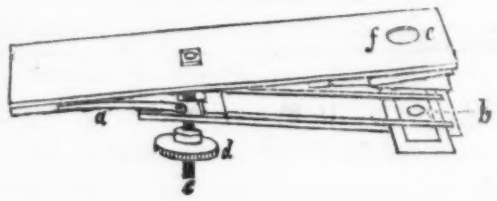


put this thread into the flame, it will melt and run up into a globule; this is the microscope, which may be smaller, but seldom is of any use if larger than a large pin's head: a little practice will soon give facility in making them, and it is bettter to make twenty or thirty at a time, as out of this number there will not be more than two or three of a perfect shape or without air bubbles and stripes. It must be done in a spirit lamp, as any other would by the smoke injure the clearness of the globule, but any clean lamp will do by pouring in spirits of wine instead of oil; the best window glass should be procured, white phial glass has too much oxide of lead in it, which is apt to be reduced to a metallic state in heat.

The next process is to *set* these minute globules so that they may be tried and selected. I have generally done this with thin sheet brass as thin as writing paper, but I believe thin lead would be preferable as being more easily worked — double a strip of lead two inches long and half an inch wide, and with a punch make an indentation, through the apex of which push the point of a fine needle, open the strip half way, it will then have this appearance. *a* the hole made by the needle. Into the lower cup drop the globule, taking care that the stem which remains on breaking it from the slip of glass does not come in the hole made by the needle, shut down the upper half, turn up the ends to keep it in that position, you will then have your globule confined between the two plates of lead, to the aperture of which the eye is applied.

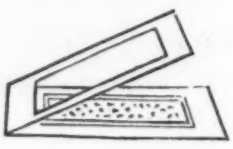
As these spherules possess a very high magnifying power, the *focus*, that is the distance they must be placed from the object, is very small, therefore the machinery to adjust the focal distance would appear to be necessarily complicated; but it is extremely simple.

Take two plates of brass, about one eighth of an inch thick, one three inches, the other two inches long, rivet them together with pieces of broken watch spring, to be had readily at any watch-maker's:



thus, *a a* the watch springs — *b* the object kept down by two strips of brass, iron or steel, under which it slides — *c*, under this plate is the globule set as above, kept in position by two similar strips — *d e* are a fine screw and nut; the screw is fixed into the long plate, and the action of the nut is to bring the two plates nearer to each other; and if the screw is as it ought to be, fine, the approach of the microscopic lens can be regulated to a 400th part of an inch. A great advantage of this is that it may be carried in the waistcoat pocket, and also that it requires no reflector, being held in a position between the eye and a direct light, either the sky or a candle. *f* is the hole to which the eye is applied.

The preparation of objects is equally simple: thus, take a piece of card 1½ inches long, ¾ of an inch broad, cut out a portion — cut a piece of paper of the same size and shape, spread some glue very thinly over each, and suffer them to dry; always prepare a dozen or two of these; cut some pieces of clear mica (isinglass), first split very thin, rather larger than the hole in the card, moisten the edges and lay it on; it will immediately adhere to the glue: proceed in the same manner with the paper, which should then be fastened to the card thus: Place the object where the dots are marked on the mica fixed to the card, and shut the paper down, after moistening the edges; it will stick, and the object will thus be confined between two pieces of mica so thin as to permit the microscopic lens to approach within a 500th part of an inch. I manufactured one of these



machines for myself, some years ago, and have several hundred objects thus prepared. I find the globules answer every purpose of the best microscope, and have never yet seen an engraving or description of any object which I was unable to discern with my apparatus, although there are many so minute and delicate as to have acquired the name of tests for the powers of the microscope.

For the use of those persons who may wish to prepare their own microscopes, I will name that one of these tests is the hair of a mouse, on which, if the microscope be good, dark rings may be discovered; also the feathers (powder, it is usually called) on the wing of a small moth, the vertical lines and quill of which should be distinctly visible.

The structure of vegetables which are viewed through the microscope with great interest by the botanist, are the pollen of different flowers. That of the Scarlet Salvia is round, with curious, dark, well defined zones; of the Œnothera, or evening primrose, the shape is triangular, with round corners; of some of the Mallow tribe, as the hollyhock, it is circular, with protuberances like thorns.

The seed vessel of ferns, with its spring for bursting open when ripe, and ejecting the seed, is very curious.

The seed of the Equisetum or horse-tail, a plant flowering in moist meadows everywhere, with its four club-shaped filaments, is a most interesting object.

These are but a few, and I do not enumerate more, because there is scarcely any part of a plant unworthy of microscopic examination. I have prepared three or four hundred objects in the manner above described, and it is always delightful to me, when I can spend an hour or two in looking them over.

The curious water plants must not be omitted. Of some of these, Professor Lindley observes, that the *Oscillarias* have an oscillatory movement, extremely active and perceptible; and the *Ulva labyrinthiformis* and *Anaboina*, with all the appearance of a plant, has, according to Vauquelin and Chaptal, all the chemical characters of an animal. The *Zoocarpæ* are also most extraordinary productions, in which the animal and vegetable nature follow each other in the same individual — vegetables in the earlier period of their existence, but producing in the room of buds little microscopic animalculæ, which after a certain length of time become filamentous vegetables.

I cannot close these remarks without mentioning a pocket microscope which I have just received, invented by a London optician, on

a new principle, which combines the great desideratum of a very strong and clear (perfectly achromatic) magnifying power, with a large field or space of vision; the whole size of the instrument is one inch in length, and five eighths of an inch wide. It is considered in London quite an acquisition.

Many more observations on this subject occur to me, but the communication would run to too great length, and should this prove of interest it may be resumed on a future occasion.

ON THE STUDY OF BOTANY.

It has often surprised me to find amongst Horticulturists so few persons who possessed the slightest knowledge of Botany, and I have more than once endeavored to account for this deeming anomaly, for it does appear strange, that persons who take so strong an interest in the cultivation of favorite plants, should remain entirely ignorant of the laws and principles which govern their growth, as an acquaintance with these, would so often throw light upon matters which it is important for them to know. It is true, that such persons attain by degrees to a kind of practical experience, the result of their own observations, and I am very far from despising the knowledge so acquired, but still this is by no means all that is to be had; we may profit much by the stored up information of others, and when this, as in the instance of the science of Botany, has been collected in sufficient masses, so as to admit of being systematically treated of, and applied, it does, as I said, appear somewhat singular, that so few of those to whom it would be so useful, should have troubled themselves about the matter. The truth, I believe, really is, that this ignorance is chiefly to be ascribed to the superficial treatment the science itself has undergone; it has been hitherto made to consist principally, if not entirely, in a sort of Dictionary of hard and uncouth names and terms, with very few observations of a practical kind attached to them or any great and leading principles laid down as guides to our researches; and Horticulturists are therefore not so much to blame as might at first be imagined, inasmuch as little or no scope was afforded them, whilst the science remained in this its almost empirical state, for entering with profit into its barren mazes. The great Linnæus

seemed to be aware of this, even after he had established his celebrated sexual system, for he made strenuous endeavors towards introducing another and a better arrangement of plants, which he foresaw would one day be established, and which he properly denominated the Natural System, that great object of the philosophizing Botanists of the present time, as being that alone by which real knowledge of the vegetable kingdom can be gained. The Horticulturist has now no longer the excuse to set up, which he might formerly fairly have done, for the labors of the two Jussieus, Decandolle, Richard, Brown, and though last not least of Lindley, professor of Botany at the London University, and others that might be named, have at last raised the Science out of its state of empiricism and degradation to somewhat more of its true dignity, and although very much remains to be done, (as in what science is not this the case) yet enough has been effected, to render it worthy of every attention from those who make the cultivation of any branch of the vegetable kingdom an object either of study, or simply of mere recreation. The science has been completely emancipated from the merely mnemonic form it had so long assumed, and is arrived at such a state, that it has not only become capable of exercising the powers of mind of the most highly gifted individuals, but of tasking those powers to the utmost, without by any means exhausting the subject. The profound researches of several of those whose names have been given above need only be adverted to, in full poof of this assertion. Let not then the Horticulturist remain any longer ignorant of a science which it imports to him above all others to be well acquainted with ; he will find it no longer a barren study.

Having said enough, I trust, to rouse such of your readers as may have contented themselves with what they may term the practical, as opposed to the theoretical part of the subject, to undertake the pleasing task of investigating it in a more regular, systematic and therefore really more practical manner, I will now endeavor to point out the mode which appears to me best calculated to secure this object, and I deem it rather an advantage than otherwise that my own attainments in the science are but slight, for I am not yet arrived at that point, when the difficulties to be overcome have been so long mastered, as to allow me to forget the steps of the progress, and thus to point them out to others ; I am rather in the situation of one of the teachers of the lowest form in a Lancastrian School, that is, just able to impart the small measure of knowledge I possess, to those who

have yet to make their first step, and if I can effect this, it is all I can hope for, and all I can pretend to.

As in Chemistry so in Botany the great instruments for arriving at any just views of the subject are analysis and affinity. By the first we are enabled to separate and thus to discover the component or constituent parts, whilst by the last, we are enabled to trace those constituent parts in all their various modifications, and by following up their arrangements in their several groups, to attain to some knowledge of their nature and properties. The greater or the less success of these investigations into nature, has mainly depended upon the having got hold of the right clue, and although there has been much groping in the dark in this science, yet we may I trust at length flatter ourselves, at having got into the right path with every chance of arriving in safety at its termination. To Linnæus, above all others we are indebted for pointing out this path, though he did not make much progress in it himself and for the simplest reason, that man does not live for ever; the course of our life scarcely admits of more being done than Linnæus actually accomplished, and our gratitude to him need not be lessened because he left much for posterity to effect. Posterity has since performed its task well, as far as the time would admit. Until Linnæus' time it can scarcely be said that Botany as a science existed at all. He first seized upon one grand feature in the vegetable creation, the organs of fructification, in other words, on those parts which almost all plants possess in a *visible shape*, namely, Stamens and Pistils, and which though invisible in some, may yet by analogy be supposed to exist likewise even in these, and which according to the theory laid down by Lindley, really do exist in all. Having laid hold of this principle of vegetable life and organization, Linnæus proceeded to raise his so called artificial system upon it, and although, as we shall see in the sequel, it contained (if I may so speak) the seeds of its own destruction, yet was it a considerable step in advance of any previous arrangement, and it assisted not a little in paving the way for that better arrangement called the Natural System, which alone is based upon sound philosophical principles. Linnæus' artificial system contained in fact many classifications that were perfectly natural; thus the cruciform or cross flowered plants, such as the wall-flower, cabbage, turnip, cress and others formed a natural order; the same is the case with the papilionaceous or pea-blossomed plants, the umbelliferous, and several others, still these cases were all rather accidents than principles, and accordingly it happened

that here and there strange anomalies took place, which proved that the system was wrongly based, and that agreement in the number or situation of Stamens and Pistils being made essential, plants were shut out, which by every reasonable analogy ought to have been included in certain sole divisions, thus for instance, the sweet smelling vernal grass (Anthoxanthum odoratnm) was put into the class Diandria Digynia (two Stamens and two Pistils) whilst all the other grasses range under Triandria Digynia; there are other similar cases. This was a state of classification so evidently imperfect as not to be tolerated any longer than until a better was established. Again the fifth class, Pentandria, contains Plants, which have not the remotest affinity with each other beyond that of agreeing in the number of Stamens, and it is besides so unwieldy, as scarcely to be of any use in tracing out any particular individual, thus it contains such Plants as the Solanum, the Atropa, the Viola, the Ribes, the Hedera, along with all the Umbelliferous tribe, than which nothing can be more dissimilar in all their essential characters, agreeing in one alone, viz. the Stamens.

It is abundantly evident therefore, that the artificial system of Linnæus, however valuable as a step in our progress, was calculated in some respects rather to create than to remove difficulties, and that it was necessary to lay down some more certain principles which should serve as a certain guide in our researches. This the natural system has accomplished, and it may be distinguished chiefly from the artificial by the circumstance that no one individual portion of a plant is resorted to as a criterion for fixing its precise place in the arrangement, but that every part is taken into account before that can be finally determined, so that when the plant has once been sufficiently investigated it may be accurately described and distinguished. The want of sufficient attention to the laws of analysis and affinity in the Linnæan system, has been shown in the cases above alluded to, where one of the grasses was shut out from its companions, and where plants were huddled together, that have no one quality or even appearance in common; but this was not its only, nor even its greatest defect; the Linnæan system afforded scarcely any insight into the nature, qualities or structure of plants, or whenever it did so, it was rather incidentally than as a principle, hence it became little better than a dictionary of names, and this has had the effect of deterring many from turning their attention to it, as it was looked upon as a dry, hard and mechanical study, leading, after all, to no real know-

ledge. From this, not altogether undeserved reproach it has now been entirely redeemed, as will be more especially seen and felt by those who take up the admirable works of Professor Lindley.—That gentleman divides the Science into four departments, viz. Structural, Physiological, Descriptive, and Systematic. The first and second of these were scarcely touched upon in Linnæus's time, and yet they are the only solid foundation upon which the two last can be raised. The structure and the physiology of plants, must of course be ascertained before we can fully describe and properly arrange them, yet Linnæus did little more than attempt the two last objects, and no better proof can be given of the advance that has since been made, than that Professor Lindley carries on his investigations in the order above stated, which is the only true method for arriving at any real knowledge.

The first point the student should aim at therefore is to attain to such a general view of the principles upon which the structure of Plants is based, as will enable him to determine with ease to which of the three grand divisions any individual may belong. This is not a difficult matter, as the mode of growth, and therefore of structure present such striking differences that a very slight examination will suffice. It is easy to remark for instance that certain vegetable productions, are invariably accompanied by a central pith, surrounded by one or more circles of wood, on the outside of which there is a bark; a branch of oak or beech will show this, and such Plants came under the general head of Exogens, formerly called dicotyledonous, from the seed consisting of two lobes such as the Bean or the Acorn. Again it is easy to perceive a difference from this mode of growth in such plants as the common cane, where no pith or central arrangement of any kind is visible, but where all the interior is alike intermingled; the Palms, and the common white Lily are instances of this kind, as are also the grasses, and they form the second grand division now called Endogens, formerly denominated monocotyledonous, from their seeds being composed of one lobe only. A third not less striking difference in the mode or growth of plants is afforded by those called Acrogens, formerly called acotyledonous, or plants having no seed lobes; such are the Ferns and other plants whose flowers (if they may be so called) are inconspicuous or rather invsible, whence they were denominated cryptogamous, in opposition to the others bearing visible or phenogamous flowers. The peculiar mode of growth in this division of the vegetable kingdom is from the points of its leaves, or as they are called, fronds, and a very slight inspection will enable the

student to perceive the difference in the principle of their arrangement from the other two.

With such a general view of the nature and principles of vegetable arrangement, it is easy to advance to the next step, for even this alone affords an idea, (though but a slight one) of that subdivision of plants into what are termed natural families. The next point to which I would direct the student's attention is the structure of the leaves and their accessories; here again such striking differences exist, that the slightest inspection will suffice to make them manifest, and the student will soon perceive that the primary divisions of Exogens, Endogens and Acrogens, are easily traced in this portion of vegetable structure; thus the leaves of Exogens will be found to contain all more or less of *reticulated* veins or ribs, which intersect one another in a variety of directions, whilst the veins of Endogens are universally longitudinal, running from the base to the apex of the leaves, in nearly parallel lines. Again the leaves of such Acrogens in which veins are traceable (for many have none at all) and especially the Ferns, are *forked*, and these slight variations will enable the student even without seeing any other portion of the plant, to determine at once to which of the grand divisions it belongs. Attention must next be paid to the other points in succession, such as the bracts, the stipules, the spines and prickles, the hairs, the roots, the seeds and seed vessels, the flowers, the calyxes and so on, and a very small share of assiduity will enable the student to gain such a general view of these as will enable him to go on in his course of analysis with effect in any direction, and it is not necessary that he should begin at any particular point; nay, Lindley even recommends changing the order of investigation, commencing at one time with the seed, and going on thence to the reproduction of that organ, and at another with the root or the leaf and thns tracing the mode of vegetation, for in our order of examination, certain general principles will be elicited, which will conduct the student to the various objects into which he is to inquire; and there is this advantage in being accustomed to investigate from any given point, that he is not so dependent upon circumstances; upon finding the plant in fact, in a certain precise state, it can be examined when in bud in flower or when the seed vessel alone is left.

This course of analysis of the vegetable kingdom is by no means so difficult of performance. Knowledge of the general laws of vegetatable structure is by no means so difficult of attainment as has been

supposed ; both are indispensable as a ground work, for by them alone is a student enabled to prosecute his inquiries with effect. The next business is that of tracing the affinities of plants, and this becomes more easy and certain in proportion to the extent and accuracy of our previous acquirements ; the principles upon which the several natural families, and in fine the natural system itself are based, may then be ascertained, and then and not till then, can any one be said to have fairly grappled with and grasped the subject.

Certain grand leading features are now to be traced, and we presently come to divide and subdivide to arrange the umbelliferous plants by themselves, the grasses may be as readily distinguished, the composite plants answering to the Linnæan class Syngenesia, are not long in being discovered, and thus by degrees we begin to systematize by and for ourselves, and this is the true method of *theorizing*, namely by means of our own individual discoveries and observations, for the error of the older botanists consisted in their satisfying themselves with having, as they thought, succeeded in finding the right place for every plant, just as one would fix a place for a word in a Dictionary, and having accomplished that, they erected a system, which was to remain unaltered, incapable of further improvement or progress. The Natural System on the contrary is so constructed as to afford the means of a gradual approximation towards the truth, in proportion as the mass of facts and observations increases, and it resembles in this respect the Science of Chemistry, which increases in precision in the same way and by the same means. It is no valid objection to the Natural System therefore, that it has not yet attained accuracy, provided it contains a provision for perpetual improvement, this is all that can be expected, and we need not be surprised if changes continually occur in the details of arrangement, for this is unavoidable as long as the science remains in so imperfect a state as it does at present, and which considering how lately it has become an object of general attention could not well be otherwise. But I am anxious to prevent the student from theorizing, alias framing systems of arrangement too soon ; before he has mastered the general principles, and stored his mind with a sufficient mass of observations, and I am equally desirous of warning him against entertaining the notion, that the Science of Botany consists merely in framing such a systematic arrangement, be it never so correct ; the great practical value of the science does not consist in that, but rather in its ministering directly or indirectly to human welfare and happiness. For this pur-

pose the investigations must be carried on with a view rather to ascertain the qualities beneficial or otherwise that plants possess, what are their constituent parts, and how they may be made available for the objects abovementioned; to this end the laws that regulate the cultivation of vegetable productions must be investigated, and it is only after all this has been performed with some diligence and attention, that we can work with effect in this last part of the field, namely a scientific classification. How constantly the horticulturist stands in need of the information which botany, thus thoroughly understood, affords, will, I trust, have been shown (imperfectly though it be) in what has been urged above; and I now close this somewhat desultory sketch of the subject, in hope that I may have stimulated some of your readers who are horticulturists, but have not yet taken up the science of botany as a study, to enter upon so pleasing, and to them so useful, an occupation. J. R. T.

SELECTION OF FLOWERS FOR THE PLEASURE GARDEN.

Having sown rather an extensive variety of flower seeds, procured from London and Paris, it will probably interest many lovers of the flower garden to be made acquainted with the result. And this is quite necessary to guide such in their purchases of seeds, as many of them are to be avoided, not being at all showy — indeed only fit for a large botanical collection.

They were all sown in the open ground, without protection, the first and second week in May, as it appeared to me that the introduction of hardy flowering plants is the most desirable object at present, and they had no farther care taken than occasional weeding.

Salvia angustifolia, *nemorosa*, and *præcox* are small flowering plants, of no value in making the garden look gay. *S. prismatica* has a handsome growth, but the flowers although of a charming blue are rather small. *S. horminum*, the red and purple topped Clary, are the prettiest annuals of this tribe, and well deserve a place in the flower garden.

Cleome pentaphylla and *spinosa*. This is an elegant tribe, but pentaphylla is rather small in comparison to spinosa, which grows about four feet high, and bears a beautiful spike of white, sometimes pinkish, flowers; the petals range themselves on the upper side and the

stamens and pistil are protruded a considerable length on slender filaments, forming a beautiful airy group.

Collomia coccinea, a very lively flower, growing in heads of bright carmine red, rather desirable and early; the seeds have, like some of the Salvias, the curious property of becoming invested with vegetable mucus when moistened with water.

Coronilla securidaca, a yellow, papilionaceous flower in heads, not very showy, but interesting from the curious manner in which it folds its leaves together at sunset, somewhat like the sensitive plant; but as the leaves of Coronilla are much larger, the effect becomes more evident.

Œnothera Lindleyana, tenuifolia, bifrons, micrantha, purpurea, densiflora, quadrivulnera, tetraptera, acaulis, and others. Of those which possess color, Lindleyana, quadrivulnera and purpurea are the most showy; tetraptera and acaulis are pure white; the former, like many of this tribe, only open in the evening, it becomes pink by the morning; acaulis is the purest and most lovely white we have ever seen.

Ipomea Boerhavii, Michauxii, striata, luteola, and others. Boerhavii is small, but flowers in profusion; it is pink, but not showy enough for most persons. Luteola we do not admire; the color is dingy and the blossom small. The others are well known here as the morning glory, and are truly ornamental.

Zinnia verticillata, elegans, grandiflora, and others. These are pretty well known here; the most beautiful is elegans, variety purpurea; there is another variety of elegans (*coccinea*) which we have seen here, of a bright scarlet color, which is certainly the finest of the Zinnia tribe.

Molucella lævis and *spinosa*. These are rather elegant in growth, but not showy; the calyx or cup which supports the flower is very singular and beautiful.

Loasa acanthifolia and *brionifolia*. These are elegant yellow flowers, very curious in their structure, but the plants possess one quality which must forever banish them from the *pleasure* garden — the whole plant is covered with hairs, which on being even slightly touched, eject a poison into the flesh, causing a painful blister, the effect of which does not pass off for several days.

Datura tatula, ferox, quercifolia. The first of these is the common weed called the Apple of Peru; *ferox* resembles it in growth, but the flower is pure white; *quercifolia* we think the handsomest flower of

the whole collection imported; it is larger than tatula, measuring five inches across the mouth, white, the nerves of a fine pink, shaded with a dull purple; the fruit is contained in a smooth capsule, and the leaf is somewhat like the oak, (*quercus*) whence its name; the manner of growth is very elegant, and as each succeeding blossom burst through its fine calyx, we thought it more beautiful than its predecessor. We can truly recommend this as an ornament to the garden.

Stramonium, double purple, is also a very desirable flower, although, notwithstanding great care, the insects mutilated and disfigured it while yet in the bud.

Delphinium (Larkspur) *dwarf double white, red, blue*, and *Neapolitan.* These, when well grown in a rich, stiff soil, must always be considerered the greatest summer ornaments of the garden. The Neapolitan we had never seen until this season; it is very desirable, the color is rather a dull light lilac, but the spike of flowers is large and thick — it makes a great show. Soon after the seedlings show the third leaves they should be well thinned out, and when the blossom appears, all the single flowering plants must be pulled up and thrown away.

Poppy, dwarf and *picotee.* The dwarf poppy is well known here; a fine display of the flowers was made at the Horticultural Society's room this season, by an amateur. The picotee is also extremely handsome, and we believe new here; it forms a large globular, greenish white head, the numerous jagged points of the petals being tipped with a slight blush of rose color; one plant we had was pure white with a tinge of beautiful carmine. This species does not seed very freely with us, the heads damping off just previous to the seed ripening.

Gentiana acaulis and *asclepiadea.* We should be proud if we could introduce G. acaulis so as to become common here; the plant has been imported several times, but from some cause or other has never flourished; nothing but the rare and expensive blue color called ultramarine can give an idea of the brilliancy of its hue. Aware of the difficulty of raising seedlings, yet under the impression that this would be the only means of accomplishing the above object, we soaked the seed 4, 24 hours, and three weeks in chlorine, and the same periods in water previous to sowing, in hopes of seeing it vegetate, but in vain; however, in Europe it always takes two years before it makes its appearance, therefore we do not yet despair. Asclepiadea some-

what resembles the Gentiana saponaria, which grows commonly in swamps near Boston, but the flowers open fully, which saponaria never does. Acaulis (stemless), as its name denotes, grows near the ground. All the Gentians possess beauty, therefore are always acceptable in the garden.

We propose to resume this subject in our next number, and only feel regret that some of the numerous amateurs of flowers in the vicinity have not furnished us with a similar list. Much may be said of the comfort of uninterrupted domestic happiness, and the uneasy feeling at constant intrusion on the quiet pleasures of horticultural employment, yet when new plants are introduced, if they remain unknown, unseen, undescribed, they might as well blossom in the desert wild, as far as regards the general interest and diffusion of horticulture. The same may be said of rare but hardy plants; we should like to see every habitation, however great or humble, with the portals and piazzas covered by monthly and climbing roses, by the honeysuckle, the cobea; every garden glowing with the rich dahlia, fragrant with the pink and carnation, and rendered attractive by a succession of brilliant flowers.

This can only be effected by encouraging the introduction and selection of the most ornamental species either of native or foreign plants, and making their beauty or other desirable qualities known and conspicuous. It is with this view we offer, and mean to continue, the above communication, and shall be happy to add to it the contributions of other amateurs of flowers. J. E. T.

EXTRACTS FROM FOREIGN PUBLICATIONS.

Loudon's Gardener's Magazine, for August, contains

An account of the Arboretum lately commenced at Chatsworth, the Seat of the Duke of Devonshire.

Directions for drawing trees and botanical specimens from nature, by Mr Loudon. This is a long and excellent article, with many wood cuts, which prevent our giving more than the mere title.

The next is an article by the same author, *on mixing herbaceous flowering plants with trees and shrubs*, which contains some principles on landscape gardening, directly at variance with what we have

always considered the true and modern principles for study. One is that "*as a garden is a work of art, and a scene of cultivation, every plant or tree placed in it should be so placed as never to be mistaken for a tree or plant placed there by nature or accident, or as to prevent the practices of cultivation from being applied to it.*" We had always understood, and still think, that the true principles of landscape gardening consisted in applying art so as to form resemblances to nature, which should bear the least possible appearance of art or artifice; and that one of the greatest of modern improvements was the substitution in the garden of natural scenery for the artificial clipped hedges, the yew and other trees tortured into the monstrous shapes of peacocks and other birds, or animals. Nor can we help thinking that the back ground of shrubbery and forest trees is the best possible relief and contrast for the colors of tall herbaceous flowers; we most cordially, however, agree with him that every tree and plant should have sufficient room to display its whole size and contour; we also think that if thick foliage is required, it should be produced by depth of plantation, and not by crowding so that only one side of a tree has room to grow. We can explain our ideas better, by referring to several groups of Butternut (*Juglans*) trees, near Boston, which are at sufficient distance to show the whole elegance of each tree on approaching; and on entering this grove, the ground is enamelled with flowers of geranium maculatum, &c. in the spring, and with asters and golden rod (*solidago*) in the autumn; and we conceive this natural effect to be consonant with the most refined principles of taste.

The following remark we protest against, also. "Let shrubberies of flowering shrubs, such as rhododendrons, azaleas, and all peat earth shrubs, which seldom grow above four feet in height, be simply dug." We are of opinion that a peat earth bed should never be dug or stirred in any way, farther than removing weeds, and this operation should be carried on when the weeds are young, so as to disturb the surface as little as possible.

An artificial bed of peat earth is a substitute for a natural bog or swamp, and it is an excellent substitute, because that particular earth is compact and retains moisture with so much obstinacy that when kept close, a long continuance of sultry weather must prevail ere it can be reduced to a dry pulverulent state, and the roots of plants surrounded by it are kept always moist; but if this bed is dug up and turned over, so as to admit the air, or let the moisture percolate freely through it, the object of peat earth is defeated.

It is with the greatest diffidence that we express opinions opposed to those of so able and experienced a writer as the conductor of the London Gardener's Magazine; but we are convinced that no one knows better than he does the value of discussion and the free expression of opinion, when strictly confined to the subject, and conducted moderately and temperately.

A writer on the subject of the failure of the potato crop in Scotland, suggests the following cause of it, which experience may prove of use to our farmers here.

"But what has been done to the sets? Are some of them affected by disease or insects, and not others? In my opinion, there is no occasion to have recourse either to disease or insects. Weakness is the cause, and this weakness is produced by a slight alteration which has taken place in the mode of management; viz., that instead of potatoes being left in the ground till November, as used to be the case formerly, they are now taken up in October, to make way for wheat sowing, before the tubers are sufficiently matured to be fit for separating into sets. As a proof that the weakness thus produced is the cause of failure, I may adduce the facts that the sets of early varieties of potatoes have not been known to fail, and also, that tubers of late potatoes, when planted whole, generally succeed. In this last case the whole of the vital energy of the tuber is concentrated in one bud or shoot, (for it is seldom that more than one shoot is produced from a whole tuber, notwithstanding its number of buds) and, therefore, a plant is produced; but when these buds are separated, the proportion of vital energy assigned, as it were, to each, is so small as to be ineffective in the production of a plant.

"Perhaps it may appear to some that what is now stated is in contradiction to the theory which recommends taking up potatoes that are intended for sets before they are fully ripe; to which I can only answer that this theory may be, and I believe is, quite correct, and that the causes of failure above mentioned may be considered as owing to that theory having been carried too far.

"I shall only further add, that the evil of too early taking up may be greatly mitigated by immediately burying the tubers in pits, instead of laying them up in heaps in houses covered with dry straw, in which state they wither, and if not sufficiently matured, suffer such a diminution of their vital principle as to be unfit for sets."

"*A History and Description of the different Varieties of the Pansy*

or Heartsease, now in Cultivation in the British Gardens, illustrated with Twentyfour colored Figures of the choicest Sorts. By J. Sinclair and J. Freeman. In 8vo. numbers, monthly, 6*d.* each; to be completed in 24 numbers, each containing a colored figure of one select variety, with descriptions, &c. London, 1835.

"The great beauty and variety of the Viola tricolor, now cultivated under the name of heartsease, pansies, &c., may be sufficient excuse for the following short remarks: — The first mention I have met with of pansies, or *three faces under a hood*, (which latter is no inappropriate name) is in some manuscript papers which have passed through my hands, relating to the management and contents of Sayes Court Garden in Surrey, by the celebrated Evelyn, written in 1687, where pansies are enumerated in the list of 'coronary flowers for the parterre and borders.'

"From that period up to about 1810 or 1812, there appears to have been little attention paid to their culture; and, perhaps, the only varieties that occurred during that period, were such as arose accidentally, and passed unnoticed, being less interesting than the original species Viola tricolor. So far as my information extends I believe that the following may be considered as the commencement of their cultivation in distinct varieties.

"About the period above noticed, Lady Monke, then Lady Mary Bennet, had a little flower garden in the grounds of her father, the late Earl of Tankerville, at Walton, who was a zealous cultivator of plants. In this latter garden was a figure of a heart, into which this amiable lady used to plant the varieties of pansies which she accidentally discovered growing in her father's garden. Aided by the industry and zeal of Mr Richardson, then and still gardener at Walton, several pretty varieties were raised or discovered, and transplanted to this little parterre. In 1813 or 1814, several distinct and striking varieties were thus obtained; and these having attracted the notice of the late Mr James Lee of Hammersmith, he, availing himself of the intercourse then opened with the Continent, applied to some of his correspondents in Holland, and procured from them a large blue variety, which is still occasionally seen in the old gardens, and which, as a matter of course, was soon added to the Walton collection. Mr Reed, one of the foremen in the Hammersmith Nursery, turned his attention to the same subject; and in the course of a few years, twenty varieties were to be had at that splendid establishment. Mr Richardson was not less active in enriching the Walton collection,

both with seedlings of his own, as well as those of others; till at last the two collections became very numerous in varieties."

On the Discovery of the Tea Shrub in India. By Dr Wallich. We extract the following:

"I have sent to Mr G. Loddiges the details of a very beautiful consignment of growing plants, which he and his worthy brother sent me lately in a *hermetically sealed* box (I may almost call it so). I wish you would make mention of this most extraordinary and novel mode in your Magazine. I have asked Mr Loddiges to send you my letter or an extract from it. — *N. Wallich.*

"The letter alluded to by Dr Wallich has not yet (July 10th) been received by Messrs Loddiges. The mode of conveying plants alluded to is that practised by Mr Ward for growing ferns, which is described at length by Mr Ward himself (X. 207). We have seen a letter from Mr Traill, the head gardener to the Pacha of Egypt, in which he states that he had received several collections of plants packed in Mr Ward's air-tight cases, perfectly safe and uninjured, which he never had done before by any mode of packing. In short, there can be no doubt that Mr Ward's mode is decidedly superior to every other hitherto adopted; and that by it living and growing plants may be sent either by land or sea from any one part of the world to any other part."

"*Gladiolus natalensis* has remained uncovered all last winter, and is now growing with great luxuriance, equal, if not better, than those bulbs of it which were taken up in the usual way."

"*American Magnolias in China.* In reply to the query p. 325, I am able to say that Mr Beale has, in his garden at Macao, a tree of Magnolia grandiflora, which, when I saw it last, in 1830, must have been twenty feet high. From this tree, Mr Beale has struck off several branches by the Chinese mode of abcission, and distributed the young plants to some of the Chinese merchants at Canton, and to some of the inhabitants of Macao. He has done the same, also, with a smaller tree, which, from the very ferruginous appearance of the under side of the leaf, I think was Magnolia g. elliptica. Besides these he had received from America Magnolia glauca, and a fourth variety which, if I remember right, was M. auriculata. The two latter plants had then been but lately received; but, as they were in good health, I have no doubt they have also been propagated and distributed, and now are, as well as the two former, established in China."

HARRISON'S HORTICULTURAL CABINET,—For August, contains colored engravings of five varieties of Fuchsia. Also an article on watering plants in pots, which we extract entire as it coincides with our ideas, and is likely to be serviceable here.

I. EVERGREENS: *and of these such as are succulent, as Pelargoniums, Geraniums, &c. Such as are ligneous, as Camelias, &c.*

The succulent class of Evergreens require a liberal supply of water during their growing state, (particularly such of them as bloom from the spring to the beginning of autumn,) but a very scanty supply during the cold months. Geraniums and Pelargoniums for instance; as soon as the rigor of winter is past, say towards the middle or end of March, when the generality of them are shooting up for bloom, should be watered on the surface of the soil at first three or four times a week; then, in another month or six weeks, if warm weather, every morning. During the summer they will require water in very hot weather morning and evening; after they are out of bloom, giving it with the rose of the water-pot over their leaves as well as on the surface. In the autumn, the water must be materially lessened; and from the middle of December, until the beginning or middle of February, it is scarcely possible (if they are kept during those months in frames without having fire heat,) to keep them too dry. During that period they will not require water more than once in a fortnight; and then presuming them to be in pots not exceeding four or six inches in diameter, they will not require more than about two tablespoonsful of water at a time. I am minute as to this family, because it is one of the most beautiful and most generally cultivated by Amateurs, who, many of them not having the advantage of a greenhouse and fire heat, find their Geraniums damp off and become mouldy, and die soon after they are put into frames at the approach of winter. This arises from over watering, and nothing else. If, during the winter, they are watered sparing as above directed, *and air is given every day when the atmosphere is above freezing point*, by elevating the lights a few inches so that no rain can touch the plants, Geraniums may be preserved very safely in frames during winter, taking care to cover the lights with mats or straw during frost. The material things for Geraniums in winter are plenty of air, light, and sun. Whenever in Geraniums, the leaves wither, turn black and mouldy, that proceeds from over watering; the only chance of saving such a plant is to take off all decayed leaves, and put it into a warm room for a week, so that

the soil in the pot may dry as speedily as possible. Keeping them short of water (added to the confinement of the frames) will cause many leaves to turn yellow and drop off: but in this class of plants that circumstance is not of material consequence, because in the spring, if the stems and roots are sound, vigorous shoots covered with luxuriant foliage will come forth. But if the plant is over watered, the succulent stem being saturated with moisture, which the cold prevents it from throwing out by evaporation, the fibres of the stem decay and its texture is destroyed. The same observations apply to all succulent Evergreens.

With respect to the ligneous class of Evergreens, they do not require so large a quantity of water during summer as the succulent, (although they must at that season be liberally supplied;) but during the winter months they require more in proportion than the succulents. The great point in ligneous Evergreens, is to have a good drainage at the bottom of the pot, and to plant them in a sandy soil, so that the water may pass freely through as soon as it is given to the plant. In winter these plants will require water in a small quantity, perhaps once a week or ten days in the frame when there is no frost. The Camellia, Rhododendron, Acacia Armata, and Corrœa Speciosa, may be instanced as families to which these observations apply.

It need probably be scarcely necessary to observe, that Evergreens should never be allowed to stand in a pan which would contain the surplus water, so as to keep the soil at the bottom of the pot in a saturated state.

2. Deciduous Plants: *or such as lose their leaves annually, as Fuchsias, &c.*

From the time that this class of plants drop their leaves in the autumn, until they shoot again in the spring, they require no water, or at most, a very small quantity once a month during that period, this also is the only proper season to re-pot them. As soon as they begin to shoot in the spring, water should be given to them, (so as just to moisten the soil in the pot,) and gradually increased until the leaves are developed; after which they should be treated as ligneous Evergreens during the spring and summer months. Many deciduous plants are very beautiful; and as they do not require light in the winter, they may be protected from frost in a cellar or vacant room without a fire, which is a great convenience to an Amateur.

3. Herbaceous Plants: *as Auriculas, Carnations, &c.*

This class requires to be watered much on the same principle as the

succulent Evergreens; but during the autumn and winter months, particular care should be taken not to allow the water to get into the centre of the plants, or in the socket at the base of the leaves: because, unless it quickly evaporates, the water will there become stagnant and rot the stem of the plant. Many herbaceous plants with thick large foliage, Auriculas in particular, should in *very hot* weather be *shaded*, and allowed to have only the morning sun.

To this class belongs the beautiful family of Chinese Chrysanthemums, which as it requires rather a different mode of treatment from most of the class, should be particularly mentioned. From the time the warm weather commences in the spring until the end of autumn, it is scarcely possible to over water them. During dry hot weather they should be freely watered, both on the surface of the pot and over the leaves, even when the sun is on them, twice a day at the least. After they have bloomed, they require but little till April.

4. Bulbous rooted plants.

Many of this class of plants vegetate and bloom during the autumn, winter, and spring months. At whatever season of the year a Bulb vegetates, it should be planted in moist soil, but very little water should be applied until it has shot up an inch or two, then the water should be given more freely aud increased in quantity as the plant grows. When in full bloom the water may be lessened in a slight degree, taking care, however, to keep the soil contantly moist, in order the longer to enjoy the beauty of the flower. As soon as it is out of bloom, water must be *freely supplied* in order to enable the leaves to be matured, and the exhausted bulb to become thereby re-established. Most young Florists err on this subject. Upon the growth of the leaves after Bulbous rooted plants have bloomed, depends the formation of the flower bud for the ensuing year; therefore, water should be given freely until the ends of the leaves turn yellow, which in most of the common Bulbs, as Hyacinths, Narcissus, &c. will be in from one to two months after their bloom. From that period the water should be gradually lessened, and in a few days altogether discontinued. Then the pots should be laid on their sides in a shady situation, where the soil in the pots will gradually dry, and the leaves and fibres of the roots wither; afterwards the roots may be taken up and preserved, to be replanted at the proper season.

5. Aquatics.

But few of this class of plants enter into the Amateur's green house or frame, therefore, they require but a short notice. The Mimulus

rivularis is one of the most beautiful. This plant will grow luxuriantly during the summer months whilst in bloom, if the pot is placed in a China bowl filled with water, when it makes a very pleasing object in a room; the Mimulus moschatus is also very desirable both for its foliage and scent. During the winter months, most Aquatics have but little foliage on the surface of the pots; they must then be kept quite out of the reach of frost, and receive but little water, still the soil should be kept moderately moist. By keeping the soil in a pot thoroughly moist, I mean that it should contain as much moisture as it can retain, so as to allow of the soil being crumbled between the fingers without sticking to them.

One very material thing with reference to keeping the soil in a pot in a regular state of moisture throughout, is to take care the hole at the bottom of the pot is large enough. I always enlarge it in every pot to about double the size it is made by the potter; this is easily done by striking the bottom of the pot with the edge of the potting trowel. B. M.

Pentonville, May, 1835.

Paxton's Horticultural Register, for August, edited by J. Main, contains among other articles one on the Mildew of Plants, from which we make the following extracts:

"It has long ago been discovered that strong soap-lather applied to the leaves or shoots of plants infected with the fungus called mildew, destroys that parasite, and restores the plant." On this, the following queries are raised —

"1. Which quality of the soap is it that is thus effectual?

"2. Would a solution of soda answer the same purpose?"

These are followed by a long detail of experiments, the result of which is that a solution of soda is injurious, and that the remedy exists in the chemical union of the ingredients of soap.

Among the numerous horticultural exhibitions, two rare and beautiful plants are named as having attracted much attention, Pentstemon speciosum and Eucalyptus pulverulenta.

Also, of thirty seedling Calceolarias, one of a pure white was considered the rarest; several were of a fine scarlet, dark purple, and cream-colors, some were variegated; the flowers of most were large.

A new seedling Pelargonium (geranium) received the appellation of Enchantress, from its beauty — the two upper petals being black, the lower ones pure white.

Also, a delicate white seedling Thunbergia, from T. alata, was much admired.

The British Flower Garden, for August, by D. Don, contains colored figures with descriptions of

Pæonia moutan, var. punicea. Polyandria digynia and ranunculaceæ. A truly magnificent seedling of P. m. papaveracea, raised in Sir A. Hume's garden at Wormleybury. It is most probably a seedling from Anneslei, as it agrees with that variety in habit, and in the uniform rich color of its petals. The flowers are, however, larger than in that variety, with the petals more numerous, more deeply cut, and of the color of carmine. It requires the same treatment and culture as the other varieties from papaveraceæ.

Viola cucullata, the hooded violet. Pentandria monogynia and violaceæ. This very pretty violet is quite common in the United States. We have frequently gathered it in the vicinity of Boston, and struck with its beauty removed several plants into our garden three years ago, where they flourish well. Mr Don says they delight in wet places and a clayey soil; this is true, as they are generally found in such spots, yet those we have transplanted are in a dry place, and are equally vigorous in flower with what are gathered in swamps. It is called hooded, from the leaves being turned in, or cucullate at the base. The flower is large, blue, and marked with dark blue veins inside, the lateral petals are copiously bearded. Mr Don enumerates and describes 170 varieties of Viola, not including garden seedlings.

Eschsholtzia crocea, saffron-colored Californian poppy. Polyandria monogynia and papaveraceæ. The principal difference between this and the variety now well known here, is in the color, this being a dark, bright saffron-color; the botanical difference is, that in this the point of the calyx is longer, and the apex or end of the peduncle (flower stem) is more expanded. It is, like the other, a hardy biennial.

Cratægus Mexicana, Mexican hawthorn. Icosandria digynia and pomaceæ. A new, distinct and beautiful variety, introduced by Mr A. B. Lambert, from the high table lands in Mexico. It is found to be quite hardy in England, and may be increased by budding on stocks of the common hawthorn.

The Botanical Register, for August, by John Lindley, contains but few plants of striking beauty. Three are orchideous plants,

one of which, Dendrobium cupreum, from the East Indies, sent by Dr Wallich, is rather handsome; the others are of great interest only to the botanist.

Lasthenia glabrata. Syngenesia polygamia superflua and compositæ. A yellow flower, from California, somewhat in the style of a small sunflower; not likely to become very popular.

Dyckia rariflora. Hexandria trigynia and bromeliaceæ. A stove plant of the pine apple tribe, from the Serra of Villa Rica, Brazil, named after the Prince of Salm Dyck, whose valuable collection of succulent plants was mentioned in our last number.

Empetrum rubrum, red crowberry. Dicœcia triandria and empetreæ. A small hardy evergreen shrub, with inconspicuous flowers.

Eutoca divaricata, straggling eutoca. Pentandria monogynia and hydrophylleæ. A small, light violet flower, from California, not very showy. E. multiflora is in gardens here, but although preferable to this, is not very likely to become a favorite.

The Botanical Magazine, for August, by W. J. Hooker, contains colored figures and descriptions of

Rhodendron arboreum, hybrid variety Altaclerensis. Decandria monogynia and ericeæ. A very splendid new seedling rhododendron raised at Highclere.

Hakea ferruginea. Tetandria monogynia and proteaceæ. A handsome, free-growing greenhouse shrub, from New Holland.

Hoya Pottsii. Pentandria digynia and asclepiadeæ. Hoya carnosa, with its dark fleshy leaf, is well known in every greenhouse here, and has, we think, the advantage in beauty over H. Pottsii, which is a native of Madagascar, from whence a single leaf was sent to Mr Sabine in London, who succeeded in raising a plant from it.

Orchis tephrosanthos, military orchis. Gynandria monandria and orchideæ. This is larger than the English military orchis; it is a rare plant, and takes its common name from the resemblance of the labellum or lip to a man with a military cap. We have twice endeavored to import some of the most curious of this tribe, that we might have the pleasure of exhibiting them, and perhaps raise a taste for them here, but in neither instance did the plants arrive alive.

Erica recurvata, recurved heath. Octandria monogynia and ericaceæ. A beautiful species of this most elegant tribe.

Vaccinium albiflorum, blue bilberry. Octandria monogynia and vaccineæ. Lately received from this country at the Botanic Garden,

Glasgow. This is the Vaccinium corymbosum of Dr Bigelow's Florula Bostoniensis, and is quite common in the swamps in this vicinity called the large bilberry, grows six or seven feet high, but flowers when much smaller.

Vaccinium cæspitosum, tufted bilberry. Octandria monogynia and vaccineæ. This is a small variety, mentioned by Michaux in his work on the American flora, but does not seem to have been found so far north as Boston. J. E. T.

ANNUAL EXHIBITION OF THE MASSACHUSETTS HORTICULTURAL SOCIETY.

The Annual Exhibition of Fruits and Flowers, of the Massachusetts Horticultural Society, took place on Wednesday the 16th and Thursday the 17th inst.; and the place selected was the Odeon, situated in Federal street, in Boston. This edifice, which was formerly known as the Federal street Theatre, has lately been taken on a long lease by a musical society, from whom it has received its present name of Odeon, a name signifying a place where *odes* are sung. It has also been transformed to a place of public worship: the stage having been converted into an altar; at the extreme end of which is the fine organ. The area having on this occasion been cleared, formed, by a slight but new arrangement, a magnificent Hall, of lofty height, and spacious dimensions, with a skylight in the centre. The gallery leading from the vestibule, being closely studded on either side with pines, like a forest, formed a dark but pleasing avenue of entrance.

The fruits which were on this occasion exhibited, were altogether uncommonly fine, and of kinds and of qualities superior to those of former years. And the display of the flowers and the fruits, and the skilful arrangement of the whole, in all its parts, produced an effect confessedly surpassing anything of the kind before witnessed.

We remarked that the exhibition, and by far the most invaluable specimens and varieties of flowers, and more especially of fruits, consisted of *new kinds*, in very great proportion;—or, of those kinds mostly which ten or twelve years ago, were unknown to our country, even in name. Thanks to those enlightened individuals, who with untiring zeal have ransacked earth, recalling home to their country all that might serve to adorn, and all that might be eminently useful, for trial in our climate, and on our highly favored shores.

The days of exhibition were unusually fine, and the concourse of visitors very numerous, both from the city, and from various and remote parts of the country.

On the second day, a discourse was delivered at the Odeon, by Professor J. L. Russell, of Salem.

The following is the account of the

EXHIBITION OF FRUITS.

By E. Vose, of Dorchester, President of the Society. — Pears: Bartlett, Passe Colmar, Tillington, Urbaniste, Wilkinson, Cushing, Capiaumont, Marie Louise, Lewis, Mouille Bouche, or Verte Longue. Peaches: Grosse Mignonne, Early York.—Melons: Persian Muskmelon, Green fleshed Cantaloupe. Also a basket of various kinds of fine fruit.

R. Manning, of Salem.—Pears: Summer Rose, Bowdoin, Raymond, Saunders' Beurre, St Ghislain, Autumn Superb, Ronville, Buffum, Cushing, Verte Longue, Lowrie's Bergamott, Washington, Popes' Scarlet Major, Julienne.—Plums: Breevort's Purple Bolmer, Late Green Gage. Apples: RambourFranc, Alexander, Lyscom, New American Crab.

Samuel Philbrick, of Brookline. — Pears: Bezi Vaet, Andrews, Capiaumont, Colmar Souverain, Verte Longue, Wilkinson, Washington, Seckel.—Rareripe Peaches.

Nathaniel Davenport, of Milton.—Chelmsford Pears; Snow Peaches.

A. D. Williams, of Roxbury.—Pears: Capiaumont. Apples: Porter, and three handsome varieties of the Red. Peaches: Golden, Purple Clingstone.

Samuel Downer, of Dorchester.—Pears: Bezi Vaet, Napoleon, Beurre Diel, Fulton, Bleecker's Meadow, Capiaumont, Lewis, Andrews, Urbaniste, Cushing, Heathcot, D'Aremberg, which has sometimes been confounded with the Gloux Morceau, St Ghislain, Lowell, Williams' Bonchretien (*Bartlett*), Catillac, Iron Pear, Beurre Knox and branches of the same, Seckel and branches of do., Crassanne, Golden Beurre of Dr Holbrook. Apples: Fine Red, Old Pearmain, Pumpkin Sweet, Porter, Ram's Horn (*fine red*), Fall Pippin, Red Siberian Crab and Yellow Siberian Crab, with branches of both varieties, Lady Apple, Nonsuch Winter Sweet.

Joshua Gardner, of Dorchester.—Apples: Fall Pippin, and branches of Siberian Crab. Pears: Seckel.

Marshall P. Wilder, of Dorchester.—Williams' Bon Chretien (*Bartlett*), Bergamotte. Apples: two varieties, both fine. Melons: True Persian Housanie Musk Melon (striped, the seeds from the London Horticultural Society, and believed to be the first of the kind produced in the country), Lord Gardner's Green fleshed Muskmelon.

John A. Kenrick, of Newton.—Pears: Seckel, Williams Bon Chretien (*Bartlett*), Chelmsford, Beurre Knox. Apples; York Russets, and some other kinds. Peaches; Alberge, Red Rareripe, Sweet Water, Cooledge's Favorite.

John Mackay, of Boston, for Henry Flagg, of Weston.—Apples: 4 baskets of Hawthorndean, beautiful. Pears: 4 baskets of Seckel, 2 do. of Heathcot.

Michael Tombs, of the Faneuil Hall Market.—Pears: Hannas, a fruit which has never to our knowledge been exhibited and believed to be a native, much like the St Michaels, but to appearance more oblong, and of larger size; Cushing, from the original tree, which in a dry and gravelly soil produces from sixteen to twenty bushels this season.

Madame Dix, of Washington street, Boston.—Pears: Bon Chretien, Dix, Old St Germain.

Dr S. A. Shurtleff, one of the Vice Presidents of the Society, Pemberton Hill.—Pears: 5 baskets of St Michaels raised in his garden in the city, Rousselette de Rheims, Fall Bergamotte, Gansel's Bergamotte. Apples: High top Sweeting. Grapes: 4 baskets of Chasselas.

Dr Zabdiel B. Adams, of Boston. Pears: Seckel, St Michael. White Imperial or Yellow Egg Plum.

William Oliver, of Dorchester.—St Ghislain, Wilkinson, Broca's Bergamotte, Williams' Bon Chretien (Bartlett). Apples: Chataigne or Chesnut apple. Melons: Cantaloupe, Persian Muskmelons.

E. Train, of Weston.—Apples: a specimen resembling in exterior the Alexander.

R. & E. Marsh, of Quincy.—Pears: Cushing; specimens about as fine as those which were exhibited the Saturday previous, 4 of which weighed 21 ounces.

S. Phipps, of Dorchester.—Pears: Williams Bon Chretien (*Bartlett*) Seckel.—Apples: Fall Pippin, Spice apple.

E. Bartlett, of Roxbury, one of the Vice Presidents. Pears: Bartlett or Williams' Bon Chretien, Capiaumont. Apples: Maiden's Blush, Ribston Pippin. Plums: Purple Gage, New Gage. Peaches: some fine specimens.

Dana & Norcross, of the Faneuil Hall Market.—Pears: Williams' Bon Chretien, Cushing, Harvard. Peaches: Cooledge's Favorite. Other baskets of pears and fine fruit.

William Worthington, of Dorchester.—Capiaumont, Monsieur Jean, Warden, Minot, Roussellette de Rheims, Seckel, St Michael, Williams' Bon Chretien or Bartlett, Native Red Cheek, Pound pear, and several other kinds. Apples: Ladies' Delight, Carhouse.

Richard Ward, of Roxbury.—Roxbury Russets, growth of 1834, Sweet apples. Pears: Bon Chretien Williams or Bartlett, Seckel. Peaches: Cooledge's Favorite, Red Rareripe, Yellow do.

Charles Stone, of Watertown.—Peaches: Yellow Rareripe, Stone's Favorite, in all 11 baskets.

Amos Bemis, of Waltham.—Peaches: Carolina Rareripes.

Mrs Deuch, of Derne street, Boston.—Yellow Rareripe Peach.

E. M. Richards, of Dedham.—Pears: Verte Longue, Harvard, Chelmsford. Apples: Red Juneating, Benoni, the last always fine; Summer Pearmain, Orange Sweeting.

B. V. French, of Boston.—Pears: Williams' Bon Chretien or Bartlett, Cushing, Wilkinson. Apples; Hawthorndean, Ruggles' apple, Downton Golden Pippin, Native Sweeting, Kerry Pippin, Yellow Bellflower, Dutch Codlin. Grapes: Morillon Noir.

Mr Slack, of Roxbury.—Pears: Bartlett, Andrews, and another variety. Apples: a large and handsome variety. Peaches, 2 baskets.

G. Pierce, of Charlestown.—Apples: 3 baskets of Porter. Pears: 3 baskets of Andrews.

William Dean, of Salem.—Pears: Johonnet, 2 baskets; and some fine Grapes from his Grapehouse.

William Kenrick.—Pears: Beurre Colmar d'Automne, a new, valuable, and most productive variety.

Messrs Hovey.—Pears: Johonnet, Williams' Bon Chretien or Bartlett; also, peaches and nectarines raised in pots.

P. May, of Boston.—Pears; Golden Beurre.

S. Sweetser, of Cambridge.—Pears: Bon Chretien.

Cheever Newhall, of Dorchester.—President peaches.

David Hill, of West Cambridge.—Peaches: Lemon Rareripe, Orange peach.

Wm. Gridley, of Boston.—Plums: a limb of beautiful fruit of the Magnum Bonum, a kind suitable only for preserving and for show.

Samuel Heath, of Roxbury.—A basket of beautiful Andrews pears.

E. W. Hayward, of Mendon.—A basket of fine peaches.

Mrs King.—Two baskets of fruit.

Mrs Timothy Bigelow, of Medford.—Some specimens of peaches, very fine.

Mr Timothy Bigelow, of Medford.—Bon Chretien pears.

William Wales, of Dorchester.—Black Hamburg grapes.

Thomas Mason, of the Charlestown Vineyard. Peaches: Royal George, Bellegarde. Nectarines: Elruge, Brugnon, a native, both kinds very beautiful. Grapes: Chasselas or Sweetwater, Black Hamburg, of the second crop.

Benjamin Seaver.—Sweetwater grapes and peaches.

Jacob Tidd, of Roxbury.---Grapes: 2 bunches of Regner de Nice, very large, one weighing 2 3-4 lbs. and the other 3 1-2 lbs.; also, three bunches of Black Hamburg, one weighing 2 lb. 6 oz., another 2 lb. 15 oz. and another 3 1-4 lbs.

Joshua Child.—Grapes: Morillon Noir.

Benjamin Guild, of Brookline.—Plums: White Gage. Grapes: Black Hamburg, raised under glass, but without fire, Sweetwater, raised in Brookline, in the open air, on common trellis; all large and fine.

John Arnold, No. 99, Cambridge street.—Sweetwater, raised in open culture in the city.

Charles Taylor, of Dorchester.—A large basket of Black Hamburg grapes, very fine.

Joseph Balch.—Pears: Green Catharine, and another for the Cushing. Apples: Benoni, and a yellow variety from England. Twice bearing red raspberries. Fine specimens of peaches. Grapes: Black Hamburg, White Frontignac.

T. H. Perkins, from his magnificent and spacious glass-houses in Brookline.—Peaches: Noblesse, Early York, French Gallande, Grosse Gallande; also, red Roman nectarines, all very beautiful. Grapes: White Passe Musque, Black Lombardy, White Sweetwater, Black Frankendale, White Muscat of Alexandria, Black Hamburg, White Syrian, Black St Peters, White Frontignac, Black Frontignac, Grizzly Frontignac, Black Cluster or Meunier Barcelona Long White. These were beautifully arranged in clusters of different colors alternate, and with a fine effect. Such a variety of the superior kinds has never been displayed, we believe, at any former exhibition. All were grown by the skill of Wm. H. Cowing. From the same source a rare and new variety of squash was sent for exhibition.

Samuel Phipps, of Dorchester.—Specimens of Valparaiso squash; also, Autumnal Marrow do., and Egg Plants.

Dennis Murphy, of Roxbury.—Lima squash; also, fine specimens of the purple and white Egg Plants.

Next to the altar, the end of the centre table was graced by a large and beautiful Orange Tree, loaded with its large and golden fruit, intermixed with others unripe, and in every stage of their growth. This was from the green-house of the Hon. John Lowell.

For the Committee, WILLIAM KENRICK.

REPORT OF THE COMMITTEE ON FLOWERS AND PLANTS.

Col. T. H. Perkins, Brookline. A handsome frame work of flowers, on which the grapes fron his houses were suspended: also, a specimen of the flowers of Phaseolus caracalla, a rare greenhouse plant of singular appearance and delightful fragrance.

Hon. John Lowell, Roxbury. A splendid Orange tree, laden with fruit; the Sweet Lime tree, an exceedingly rare plant; a fine specimen of the elegant Gomphocarpus; Gloxinia maculata and speciosa, Plectranthus fruticosus, Justicia picta, Begonia argyrostigma, Ardisia solanacea, with many other ornaments of the greenhouse; and amongst a variety of cut flowers were the stately Canna speciosa, and the rare Strelitzia regina.

W. Pratt, Esq., Watertown. A magnificent collection of Dahlias, with a very liberal donation of cut flowers.

Thomas Lee, Esq., Brookline. Two elegant vases, containing cut flowers, amongst which were Calandrinia grandiflora, Linaria genistifolia, Lupinus mutabilis, Helenium autumnalis, Argemone Barclayana, Thunbergia alata, Maurandia Barclayana, and many others.

Mrs Norcross, of Boston. Several fine plants in pots, amongst which were Polianthus tuberosa (the Tuberose), Myrtle-leaved Orange, Begonia Evansiana, and others.

H. A. Breed, Esq., Lynn. A large and fine bouquet of cut flowers.

Hon. E. Vose, Dorchester. A large quantity of cut flowers.

M. P. Wilder, Esq., Dorchester. A very fine and numerous collection of Dahlias, amongst which the most conspicuous for beauty and successful growth, were Countess of Ponza, Lord Chichester, Polyphemus, Richardson's Alicia, Brown's Ophelia, Belladonna, Countess of Liverpool, Jason, Negro boy, Agrippina; also, a vase of about forty varieties of beautiful autumnal roses, including the celebrated Palavicini and the Triomphe de Bollwiller, a large donation of cut flowers, and many rare exotic plants in pots.

S. Phipps, Esq., Dorchester. Celosia cristata, and several other beautiful plants in pots, with a fine specimen of Solanum melongena, the Egg plant.

J. F. Priest, Esq., Boston. A large and magnificent plant of the Salvia splendens; double-flowering Pomegranate, and several others.

Mr Thomas Dunlap, from the garden of W. G. Buckner, Esq., Bloomingdale, N. Y. A fine collection of Dahlias, the most beautiful of which were Wilmot's Superb, Granta, Paroquet; Diadem, a seedling raised by him, in the style of Countess of Liverpool, and Roscoe, another fine seedling, also raised by him.

E. M. Richards, Esq., Dorchester. A yellow seedling Dahlia of very great merit, raised by him.

W. Worthington, Esq., Dorchester. A considerable number of bouquets of cut flowers, containing, with others, some remarkably fine specimens of China Aster.

J. L. L. F. Warren, Esq., Brighton. A fine collection of Dahlias, with several beautiful bouquets.

J. Crane, Esq., Boston. Two fine plants, in pots, of Helianthus giganteus.

Mr S. Walker, Roxbury. A fine bouquet of cut flowers, with a choice collection of Dahlias; the most brilliant in color and perfect in shape were Queen of the Dahlias, Miss Pelham, Denisii, Springfield Rival, Tyso's Matilda, Groomsbridge's Matchless; also, a small but elegant group of seedling Heartsease, (Viola).

Botanic Garden, Cambridge, under the direction of Mr Carter, the following plants in pots: — Banksia serrata in flower, Eugenia jambos, Callistemon lanceolata, Eleagnus, Melaleuca, Clerodendron, Protea argentea, Acacia falcata, Aster argyrophyllus, Laurus indica, Paasiflora alba, Diosma, Gordonia lasianthus, Ballota, Fuchsia tenella and Thomsonia, Calothamnus quadrifida, Rhododendron, and others; also, a very fine collection of Dahlias, the most prominent of which were Wells's white, Amanda, Belladonna, Queen of the Dahlias, and a seedling of considerable beauty, raised by Mr Carter.

Mount Auburn Garden, under the direction of Mr Russell. A profufusion of cut flowers.

W. Kenrick, Newton. Several beautiful plants in pots, including two fine specimens of Morus multicaulis, with a large quantity of cut flowers.

J. A. Kenrick, Newton. A large quantity of cut flowers.

Messrs Winship, Brighton. A large quantity of cut flowers, with two magnificent plants of the Cockscomb, Celosia cristata.

Lancaster Botanic Garden, under the direction of Mr Jos. Breck. A numerous and matchless collection of Dahlias; the most striking for beauty and shape were Village maid, Thorburn's seedling from Widnall, King of the Whites, Transcendant, Colvill's Perfecta, Widnall's Jason, Queen of the Yellows, Wells's Royal Lilac, and Margaret's Favorite, a beautiful seedling, raised by Mr Breck.

Messrs Hovey, Boston. A very choice and brilliant collection of double China Asters, embracing twelve distinct kinds, with several very fine Dahlias, the most conspicuous for beauty both of shape and color were Lord Liverpool, Negro boy, Cassina, Prince George, Widnall's Adonis, Picta formosissima; also, several bouquets, remarkable for variety of flowers and elegance of arrangement, containing Gladiolus natalensis, Zinnia violacea var. coccinea, Euphorbia variegata, Dahlias, Phlox roseum, glomerata, cordata, Wheeleriana, Americana, Solidago altissima, with a quantity of cut flowers.

Mr Sweetser, Boston. A superb collection of Dahlias, amongst which the finest were Alba fimbriata, and the King of the Yellows; several beautiful bouquets, and a fine specimen of Rosa Lamarque, one of the most delightful and fragrant of the tribe.

Mr D. Murphy, Roxbury. Many greenhouse plants; amongst them were a large Myrtus communis with fruit, Cyclas revoluta, Viburnum tinus, Orange trees, Calla Ethiopica, many bouquets and cut flowers.

John Arnold, Cambridge. A variety of plants in pots.

J. D. Williams, Boston. A variety of plants in pots; among them were the Silver-edged Holly, the Irish Yew, and the Laurel.

W. Wales, Dorchester. A fine collection of cut flowers and bouquets, in one of which was the beautiful and fragrant Yellow Tea Rose.

S. H. Weld, Esq., Roxbury. Dahlias and cut flowers.

B. P. Winslow, C. Newhall, J. Richardson, N. Davenport, J. Gardner and Mr Farnsworth. Cut flowers.

The open weather has produced a very fine season for dahlias. The show of these flowers at the Horticultural Society's room, on Saturday, August 26th, was even superior to the exhibition recorded above. A specimen from M. P. Wilder, Esq., of Richardson's Alicia, surpassed all we had hitherto seen in beauty. Mr Carter, of the botanic garden, amongst many others, brought a very fine flower of Levick's Incomparable, dark petals with white tips. Mr Walker's and Mr Sweetser's collections were not far behind. Hon. John Lowell sent a superb specimen of Pancratium speciosum, the reward of the care and attention of some years.

HORTICULTURE NEAR BOSTON.

THERE appears to be an increasing taste and spirit in horticultural pursuits throughout the Union — a considerable thirst for the beauties and novelties of Flora, and the bounties of Pomona. In these, the capital of Massachusetts seems to keep pace with her sister cities, and we have been much gratified during a recent visit to several of the public as well as private establishments near Boston, with observing the vigor of many new plants imported this spring from various parts of the world.

Few persons are aware of the anxiety, trouble, and risk of loss attending the importation of plants from foreign countries, and the adaptation of their habits to this climate, particularly by nurserymen, who have to make a profit, either by the resale, or by the more tedious process of propagation. Many plants which meet with a ready sale in Europe, and therefore acquire a great and attractive name, are on arrival found to possess elegant but small flowers, or are perhaps mere botanical curiosities, whose beauty does not yet attract much attention here, as there are fewer scientific collections of plants; others of the most showy species are of such tender habits that it is only after repeated trials and losses, that a short and favorable voyage permits their arrival alive; such specimens, therefore, often inflict a total loss on the importer.

We have been led into these remarks to illustrate our first position of the increase of taste for these pursuits, without which we are certain Messrs Winship would not have ventured on the extensive importation we observed in healthy vegetation during our visit to their nursery. These gentlemen seem determined that no exertion on their part shall be wanting to place their establishment on a par with any other in the Union. There is an air of business, of anxiety for accuracy in naming and knowing the nature of every fruit tree or plant, (and the stock and variety is very considerable on the premises) which pleased us much. It would be forming a large catalogue, to give a list of all we saw, but a fine specimen of Lagerstræmia indica, in full bloom, was very attractive; this plant, with the varieties Poinciana, are the great ornaments of the West India gardens. The collection of heaths, and of the woody plants, including a very fine Epacris grandiflora, were in good health; their extensive border of herbaceous plants was filled with floral glories. When the improvements in that part of the grounds contiguous to the rail-road are completed, the *coup d'œil* presented to the passengers in the cars, when just emerging from under the bridge, will be very striking: on the left will be a deep ornamental bank of flowers, kept in a constant glow of various colors, terminated by their romantic moss house, now covered with the beautiful Cobea scandens; on the right will be presented an ornamental cottage, erecting by Messrs Winship, with apartments for the purpose of affording shelter to parties waiting the arrival of the rail-road cars. The piazza surronnding this neat structure will be decorated with climbing roses, honeysuckles and other plants; these, in the full splendor of bloom, will produce a most delightful effect, particularly as the contrast between this and the few preceding miles, which are very barren, is suddenly introduced. We feel great gratification at every ornamental addition to Boston or its vicinity, and of course none please us better than horticultural ones; there is no doubt that the taste and liberality evinced in these improvements will attract much attention, and thus become the source of increased business to Messrs Winship's establishment.

We also visited the Cambridge Botanic Garden, which is under the direction of Mr Carter, a very experienced cultivator, who seems to succeed admirably with every plant he undertakes. The Dahlias were in uncommon splendor; the collection comprises almost every new variety from Europe, with most of the old ones which have retained their celebrity and beauty; that named Miss Pelham struck

us as a very beautiful flower. The most attractive plant to us was Hedychium gardenarium, one of the Scitamineæ, with a most fragrant spike of pale buff flowers, in the finest perfection. Eugenia Jambos had many clusters of fine fruit on the eve of maturity. This garden contains a most valuable collection of plants, many of them the fruit of Mr Nutall's exertions, and is kept in excellent order. When botanical studies have attained that repute here which they now deserve, and to which they are fast hastening, this garden will become the resort and source of pleasure to all who are blessed with a taste for such exercises of the intellect. A catalogue with notices of the specimens now in this garden, would be highly interesting and instructive.

We had also the pleasure of passing through the grounds of Mr J. A. and Mr W. Kenrick, who have adjoining nurseries in Newton. Both these gentlemen have recently made considerable improvements on their grounds. In those of Mr J. A. Kenrick, we were much struck with a large square inclosure formed by a thick hedge of cypress trees about six feet high, clothed with foliage to the ground. These inclosures are in every nursery in England, for the purpose of protecting tender shrubs during the winter, and shading them in the summer. It is the only thing of the kind we have seen here. The stock of roses is considerable, and a very few years will give Mr K. a large quantity of ornamental shrubs and other plants, for which we anticipate an ample demand from the increase of horticultural taste in New England.

The great features of Mr W. Kenrick's establishment are the stock of Morus multicaulis, and the nursery of fruit trees. The former must amount to nearly one hundred thousand plants, and will if, as we think highly probable, they prove hardy enough to stand the winters here, become a source of wealth and independence to the proprietor. This gentleman has taken great pains to import from Europe the most approved varieties of apple, pear, peach, nectarine, and other fruits, with a view of trying their value when grown in this climate. We had not time to go through the young plants of each variety, but there appeared an ample stock of healthy trees, from which selections might be made for the garden or orchard. We cannot omit noticing the magnificent landscape from a rustic stand erected by Mr Kenrick on an elevated part of the grounds; from this the view embraces one of the most delightful panoramas we have ever witnessed, rich in di-

versity of hill and valley beyond expression, while the extent is indicated by the clear outline of the Wachuset mountain in the distance.

At Belmont Place, we observed many beautiful plants in flower; among others, Crinum amabile, the double scarlet pomegranate; Passiflora edulis, the edible passion-flower, in fruit; this we have tasted in England, but prefer the gooseberry, which it somewhat resembles. The horticultural taste displayed in these grounds we hail with pleasure, and hope that it will find many imitators; nor is it necessary for this purpose to possess unbounded wealth. To render prominent the varied beauties of the surrounding landscape, to enjoy the diversified and beautiful forms of the trees in the adjoining land, to form the small allotment of garden into elegant parterres of flowers, is equally within the grasp of him who dwells in a humbler sphere; but for the introduction of this taste, for the example which creates this love for the charm, the beauty, of natural scenery, we are indebted to wealth, and for this we offer our acknowledgements. There are several establishments we have not yet visited, but shall take an early opportunity of doing. J. E. T.

DISCOVERY OF THE GENUINE TEA PLANT IN UPPER ASSAM.

"It is with feelings of the highest possible satisfaction that we are enabled to announce that the tea shrub is, beyond all doubt, indigenous in Upper Assam, being found there through an extent of country of one month's march within the Honorable Company's territories, from Sadiya and Beesa, to the Chinese frontier province of Yunnan, where the shrub is cultivated for its leaf. We have no hesitation in declaring this discovery, which is due to the indefatigable researches of Captain Jenkins and Lieutenant Charlton, to be by far the most important and valuable that has ever been made, in matters connected with the agricultural or commercial resources of this empire. We are perfectly confident that the tea plant which has been brought to light will be found capable, under proper management, of being cultivated, with complete success, for commercial purposes, and that, consequently, the object of our labors may be before long fully realised. It is proper to observe, that we were not altogether unprepared for this highly interesting event. We were acquainted with the fact, that, so far back as 1826, the late ingenious

Mr David Scott sent down from Munipore specimens of the leaves of a shrub which he insisted upon was a real tea; and from reports to the Governor-General on the north-eastern frontier, and his assistant, that a similar assertion was strongly urged in regard to the existence of the tea in Upper Assam. Still, we felt ourselves bound to suspend our decision on the subject until we should be in possession of the fruit of the reputed shrub, the only test which ought to guide us. We knew that several species of camellia were natives of the mountains of Hindustan, and that two of these were indigenous in our north-eastern frontier provinces; and, taking into consideration the close affinity between the two genera, we were disposed to expect that the alleged tea would prove nothing else but some sort of camellia. We have at length obtained the fruit of the Sadiya plant from Lieutenant Charlton, and we are now enabled to state, with certainty, that not only is it a genuine tea, but that no doubt can be entertained of its being the identical tea of China, which is the exclusive source of all the varieties and shades of the tea of commerce. With the view of exhibiting the peculiarities in the structure of the fruit, on which depends entirely the difference between the tea and camellia, we have desired our officiating secretary to annex to this letter a sketch of the fruit of both, with explanatory remarks."

The chief obstacle to the culture of the tea, not only in the cooler regions of India, but also in various parts of America, and even the south of Europe — possibly, even in the south of Ireland — has always, as it appeared to us, been the difficulty of preparing it by the tedious mode of manipulation in use among the Chinese. It is unreasonable, however, to suppose that this excessive manipulation is necessary. Tea leaves, or young shoots of the tea shrub, may be dried like hay, or as the young shoots of the birch and other trees are in Sweden, then fermented to any degree that may be necessary; that is, if fermentation be necessary at all; and afterwards compressed into cakes almost as solid as chocolate, by a Bramah press. In this state it would lose none of its virtues for many years, and might be sent from one part of the world to another in little bulk. The taste would, doubtless, be different from that which tea has at present; but if it were found to be equally wholesome, the prejudice in favor of the present taste would, like all other prejudices, be got over in time. It appears from a statement in the pamphlet above quoted from, that the Singphos and Kamtees are in the habit of boiling the stalks and leaves, and then squeezing them into a ball, which they dry in the sun, and then retain for use. — *Loudon's Gard. Mag.*

WORK IN THE FLOWER GARDEN FOR OCTOBER.

If the directions in a former number have been followed the garden will still be gay with the remains of the summer annuals in addition to the autumnal Dahlia, China aster, Marvel of Peru, &c. — care must now be taken to remove all plants that have done flowering except where it is wished to preserve seed; these should be tied up neatly, yet not closely or the seed will damp and mildew — all weeds should be carefully removed before the seed is ripe, the old adage says *one year's seeds give seven years' weeds.*

Place marks to all herbaceous perennials so that in stirring the ground the ensuing spring the young heads rising may not be destroyed — those of this species which are too tender to withstand the climate may be placed in boxes in the cellar and this month will be the proper time to take them up — many others will be more secure if covered with pine boughs, which may be prepared now. Pæonies are, we believe quite hardy, even P. moutan remained out all last winter only with the above protection.

In this month take up bulbs of Tigridia and other migratory plants of the southern regions which are destroyed by the first frost.

Most of the green-house plants must now be housed if not done previously, as a night's frost gives no warning, but be mindful to give them as much air as the fine weather will permit during the day and decrease gradually the quantity of water.

Save seed of your choice flowers and always gather in the middle of the day — collect all leaves as they fall, into a heap for the purpose of manure; they are a great treasure to the florist. J. E. T.

GARDENER'S WORK FOR OCTOBER.

Gardeners are too apt to suspend the use of the hoe and of other means of extirpating weeds too early in autumn. In consequence of negligence in this particular couch grass, pigweed, purslane and other vegetable intruders give much more trouble than they would if met with that timely and continual opposition, which is necessary to their subjugation. Every weed which escapes extirpation, becomes the parent of a numerous progeny of pestiferous plants which spring up and monopolize the soil at the expense of useful products. Let

therefore the provident tiller be aware that "an ounce of prevention is better than a pound of cure;" and that "the best way of weeding is to prevent weeds from seeding." *Cobbett's American Gardener* observes that many things which are usually sown in the Spring, would be better sown in the fall; especially when we consider how little time there is for doing all things necessary to be done in the spring. Parsnips, carrots, beets, onions, and many other plants, according to that writer may be safely sown in the fall. Mr Armstrong states that early crops of peas may be best had by sowing in the fall in sheltered situations, and covering during the winter, with a layer of leaves, and another with long stable manure, loosely applied to keep the leaves in their places. Peas sown in the fall according to Cobbett, will ripen fifteen days earlier than those which are put into the ground in spring. Towards the end of the month, if the stalks of asparagus turn yellow, cut them close to the earth; clear the beds and alleys from weeds, and carry them with the asparagus-stalks from the ground. It will then be well to cover the beds with old litter, well trodden down to be removed in the spring. You may now apply a layer of dung or of good compost, an inch thick over the beds. You may now plant out onions to raise seed the next season. The seeds of dill, shirret, rhubarb, sea-kale may now be sown; for if kept out of ground till spring many of them will not vegetate till a year after; but when sown in October or November, if the seeds are fresh and perfect they will come up in the April following. You may now begin to take up and secure potatoes, if they are fully ripe and the vines dead. Potatoes should be picked up immediately after the hoe, and exposed as little to the sunshine as possible. If they lie for a long time in the sun, they are apt to turn green, and become in a degree poisonous. Such spaces of ground as are now vacant should be dunged, and then dug or trenched, and thus have the advantage of a winter fallow, and that exposure to frost, which will reduce it to fine tilth, and destroy worms, larvæ of insects, &c.

Fruit Garden and Orchard. The old beds of strawberries should, towards the last of this month, be cleaned from weeds, and the vines or runners taken off close to the plants. Then, if there be room, loosen the earth to a moderate depth between the plants, taking care nor to disturb the roots. And if the plants are in beds with alleys between, line out the alleys and let them be dug a moderate depth, breaking the earth very fine and spreading a sufficiency

of it over the beds, between and round the beds, taking care not to bury their tops. A slight top dressing of compost may now be applied. Early apples and pears may now be gathered; but those intended for winter's use should remain on the trees as long as safety from frost will permit. They may be as well preserved in dry sand as by any other mode. If you are not apprehensive of the depredations of mice, rats and squirrels, &c. you may sow the stones of plums, peaches, nectarines, apricots, &c. as soon as the fruit is ripe, or you may, if you think it more prudent, preserve them in sand till March or April. Apples, if fully ripe, may now be picked, though as a general rule it is best to let them remain on the tree as long as they are safe from frost. Noah Webster, Esq. observes that "The best mode of preserving apples for spring use I have found to be putting them in sand as soon as picked. For this purpose I dry sand in the heat of summer, and late in October put down the apples in layers, with a covering of sand upon each layer."

VINEYARD. M'Mahon advises not to prune grape vines in autumn. "In the southern States this may be done, with great propriety, as soon in this or the ensuing month as the foliage shall have been shed, but by no means before, as while the leaves remain on, the vines will not have done growing, and consequently the wood will not be sufficiently ripe and hard. Rooted vines may now be transplanted, but they should be protected by laying litter round their roots, or some other suitable defence against the severity of the frosts. A writer in the "*New American Gardener*" says, "The best made of raising the plants is by cuttings taken from the vines at the fall pruning, and preserved in earth till Spring. These may be made either of one eye or bud, or of four or five, attached to a small portion of the two years' old wood, forming a cutting in the shape of a mallet."

NURSERY. The best time for sowing acorns of every sort as well as chesnuts, walnuts, hickory nuts, &c. is immediately after they fall from the trees. If they are long kept on hand, in a dry state, they lose their power of vegetating. If, however, there is danger from mice, rats and squirrels, it will be better to preserve them till the early Spring months, in sand or earth, or in moss, and if they should sprout, they will advance in vegetation but very little before the Spring opens. if they are kept in a cool place.